

Clement J. Zablocki
VA Medical Center
Milwaukee, Wisconsin

Division Based Memorandum
Acute Medical/Surgical Nursing
Critical Care

Pronation Therapy

Key Words: proning, pronation, pronation therapy, RotoProne® bed

I. Purpose:

Outline patient care for the patient receiving pronation therapy.

II. Policy:

A. A physician order is required to initiate and discontinue prone positioning.

B. Staff recommendations:

a. Manual pronation: a minimum of three staff are present to assist with manual pronation when the patient is mechanically ventilated. Four to Five staff may be needed depending on patient size.

i. Position of staff:

1. Head of bed for airway management and ETT protection (Respiratory therapy staff)

2. One to two on side patient is turning from.

3. Two on side patient being turn to.

b. RotoProne bed pronation: a minimum of two licensed staff trained in use of the specialty bed are present whenever the patient is being rotated from supine to prone or prone to supine positions utilizing the RotoProne bed. Staff knowledge includes how return the patient to a supine position in the event of an emergency.

C. The goal of pronation therapy is to have the patient in the prone position for 16 hours per day.

D. If the patient is decompensating while proned or supine notify the physician. The patient may be returned to the supine or proned position earlier than scheduled.

E. It is recommended that patients have a central line and arterial line placed prior to rotation, but staff should not delay pronation for line insertion.

- F. If the RotoProne bed is in use and the patient is hemodynamically stable for transport to a diagnostic test, a physician order will be obtained, and the patient will be moved to regular ICU bed prior to transport.

III. Responsibilities:

- A. Evaluation for the following criteria is done prior to entering an order for pronation therapy.
1. Relative inclusion criteria:
 - a. Severe Adult Respiratory Distress Syndrome (ARDS)
 - i. PaO₂/FiO₂ ratio ≤ 150mmHg
 - ii. PEEP ≥ 5 cmH₂O
 - b. Timing: within 1 week of a known clinical insult or new/worsening respiratory symptoms
 - c. Chest imaging: bilateral opacities not fully explained by effusions, lobar/lung collapse, or nodules
 - d. Origin of edema: respiratory failure not fully explained by cardiac failure or fluid overload
 2. Relative contraindications:
 - a. Height greater than 6' 6". Weight greater than 350 pounds
 - b. Unstable facial, skull, cervical, thoracolumbar, or pelvic fractures
 - c. Skeletal or cervical traction
 - d. Uncontrolled intracranial pressure (ICP)
 - e. Recent sternotomy (use kinetic therapy with turns greater than 40 degrees if possible)
 - f. Open abdominal wounds (contain with a wound vac if prone)
 - g. Severe hemodynamic instability
 - h. High risk of requiring CPR or defibrillation
 - i. Pregnancy
- B. Criteria for stopping proning:
1. PaO₂/FiO₂ > 150 mmHg four hours after supinating with PEEP < 10cm H₂O and FiO₂ < 60%
 2. Complications during proning necessitating interruption of proning
 3. Consider continuing prone positioning until clear improvement in gas exchange, mechanics, and overall clinical course.
- C. Use of the pronation therapy orders in CPRS is required.
- D. The RotoProne® rental bed can be ordered following the steps in appendix A. A consult for supply/equipment only will be entered.

IV. Procedure:

- A. Patient preparation
1. Assess the patient's level of consciousness, level of sedation and pain utilizing approved scales. Administer sedatives, analgesics, and paralytics (if ordered) as prescribed.
 2. Ensure adequate number of experienced RN and RT staff are available to assist in and monitor the turn.

3. Provide patient and family education on procedure.
4. Nutrition:
 - a. If receiving enteral nutrition, verify that feeding tube is post pyloric. If post pyloric hold TF for 20-45 minutes prior to proning (45 preferred).
 - b. If unable to place tube post pyloric hold feeding while patient in prone position
5. Ensure that the Endotracheal tube (ETT) is secured. A commercial holder should be avoided during pronation whenever possible due to the risk of pressure injury development. Steps for intact facial skin:
 - a. Apply non-alcohol barrier wipe to the face.
 - b. Apply adhesive solution as needed.
 - c. Secure tube with medical cotton tape. Make sure to allow room for swelling when taping.
 - d. Apply mepilex dressing on top of the tape covering cheeks and forehead
6. ETT measurement will be done from the teeth since the lips will swell.
7. Lubricate the eyes per physician orders. Do not cover eyes or tape shut.
8. Ensure tongue is inside of the mouth. If swollen or protruding insert a bite block or oral airway. Apply wet 4x4 gauze pads to protruding tongue.
9. Perform any required care before pronation
 - a. Secure all lines, tubes, and drains.
 - b. Apply mepilex dressings to high risk areas including bony prominences of the face (i.e. cheeks, forehead, chin), anterior shoulders, iliac crest, chest, sacrum, elbows, knees, and skin areas touching side packs.
 - c. Move ECG electrodes to back. Remove electrodes on front side of patient.
 - d. RotoProne bed use:
 1. Apply moisture barrier ointment to surface contact areas of the patient's skin before securing buckled pads on patient.
 2. Remove all linens from bed and remove patient gown while in bed to prevent skin breakdown.

B. Initiate pronation

1. Turning the patient with the RotoProne bed
 - a. Obtain bed as outlined under responsibilities.
 - b. Pronate the patient following the steps outlined in the RotoProne Therapy System user manual, pages 3-1 to 3-28. The user manual is saved on the ICU SharePoint site in the equipment resource folder.
 - c. The patient should be turned towards the ventilator when proning and turned away from the ventilator when positioning back to a supine position.
2. Manual pronation utilizing the ceiling lift:
 - a. Place a repositioning sling under the patient.
 - b. Remove the headboard and pull the bed away from the wall.
 - c. Thread ETT through the proning face pillow and place on top of face. Make sure it will not put pressure on the eyes when the patient is proned.
 - d. Place pillows:
 1. 2 pillows on the chest
 2. 2 pillows on the hips (above the knees)
 3. Pillow on the calves
 - e. Place absorbent pads:
 1. One over buttocks

2. One over head
 - f. Place second repositioning sling over the top of the patient and tuck around the perimeter of the patient's body.
 - g. Position patient's arms at his/her side.
 - h. Attach bottom sling to the ceiling lift.
 - i. Lift patient off the bed and move the patient to the edge of the bed on the opposite side of the ventilator.
 - j. Staff on the ventilator side detach the repositioning sling loops and tuck the lift repositioning sling under the patient.
 - k. Slowly raise the ceiling lift hoist. Raise the bedrail on the same side where the hoist is being raised. Staff on the ventilator side will provide pressure to the patient's hips and shoulders to gently guide the patient into side lying. The patient will slowly tilt and be guided by staff into the prone position.
 - l. Once in the prone position disconnect the top sling and remove it.
 - m. Connect the bottom sling if needed and reposition the patient in bed.
 - n. Adjust patient positioning as needed
 1. Position arms to rest in a neutral position point up to head of the bed. Place arms at a 90-degree angle or less to prevent brachial plexus nerve damage.
 2. Verify that the face pillow is supporting the patient's forehead and is not placing pressure on the eyes.
 3. Body should be in a neutral position and the neck should not be hyper extended.
 4. Use wedges or pillow to adjust positioning as needed.
3. Returning the patient to the supine position utilizing the ceiling lift.
 - a. Remove the ECG leads and electrodes from the back.
 - b. Place absorbent pads over the buttock and then tuck the repositioning sling over the patient.
 - c. Attach the bottom sling to the ceiling lift
 - d. Lift patient off the bed and move the patient to the edge of the bed on the ventilator side of the bed.
 - e. Staff on the non-ventilator side detach the repositioning sling loops and tuck the lift repositioning sling under the patient.
 - f. Slowly raise the ceiling lift hoist. Raise the bedrail on the same side where the hoist is being raised. Staff on the ventilator side will provide pressure to the patient's hips and shoulders to gently guide the patient into side lying. Staff will provide support as the patient is slowly lower away from the ventilator and on to their back.
 - g. Remove the top ceiling lift sling, head pillow, pillows, and absorbent pads.
 - h. Reposition the patient as needed.

C. Monitoring and care

1. Move between prone and supine position per physician orders and patient tolerance.
2. Head of bed in the prone and supine position to help decrease facial edema:
 - a. Place the patient in reverse Trendelenburg position.
 - b. Set the degrees at -11 if on RotoProne bed.
3. Repeat zeroing of hemodynamic transducers once prone. Ensure correct leveling of the transducer.
4. Monitor EtCO₂ and SpO₂ continuously.

5. Assess patient's oxygenation and hemodynamics after pronation. If the patient decompensates immediate post-turn, monitor for 15 minutes, then consider repositioning.
6. Obtain arterial blood gases (ABGs) one hour after proning or supinating per physician orders. Specify "prone" or "supine" to lab.
7. Assess the patient's level of consciousness, level of sedation and pain utilizing approved scales. Administer sedation, analgesics, and paralytics as prescribed. If receiving paralytic monitor TOF and BIS per Neuromuscular Blockade and Peripheral Nerve Stimulation PSM # I-16.
8. Continually assure adequate security and position of all invasive lines, tubes and tubing.
9. Provide respiratory care:
 - a. Evaluate ETT securement frequently for correct placement and tape tightness over swollen face. Document ETT placement with teeth (not lips).
 - b. Suction and provide secretion management every 2-4 hours and prn.
 - c. Oral care every 2 hours.
10. Continue tube feeding if tube has post pyloric placement.
11. Perform Range of Motion (ROM) every 2 hours.
12. Provide skin assessment and care:
 - a. Observe the patient's skin for areas of nonblanching, redness or breakdown every 2 hours. Assess all pressure points including the face, ears, anterior shoulders, axilla, iliac crest, feet, and genitalia.
 - b. Continue mepilex dressing to high risk areas outlined in patient preparation.
 - c. Adjust proning packs or pillows to avoid direct pressure on knees and toes.
 - d. Elevate heels when supine.
 - e. Assess tubing location to prevent device related pressure ulcers.
 - f. Insert rectal tube if indicated.
 - g. Consider using breathable linen pads under patient. Do not use pads with plastic backing, or towels.
13. Provide face and eye protection:
 - a. Ensure RotoProne bed face mask padding or head cushion is adjusted to avoid direct pressure on the eyes. Head and face packs should only lightly touch the face.
 - b. Lubricate the eyes per physician orders. Do not cover eyes or tape shut.
 - c. Ensure the eyes and lips are visible through the face pack
 - d. Remove the face pack or head cushion when supine. Cool packs on face may be applied while in supine position to help with facial edema. Do not apply ice directly to face.
 - e. Change face packs or head cushion every 72 hour and prn if they become saturated.
 - f. Apply wet 4x4 gauze pads to protruding tongue.
14. Prevent feet pressure injury:
 - a. Apply mepilex to heel or apply heel boots.
 - b. Elevate heels when in supine position.
 - c. Avoid pressure to toe tips and toe nails. Do not place RotoProne lower leg proning pack or pillow directly on toes.
 - d. Adjust foot support boards to provide proper foot positioning. If patient is 6'2" or taller remove foot support boards. Pad bottom end of bed to protect feet.

15. Continue Sequential compression device (SCD) use during prone therapy if ordered. Assess tubing position to prevent pressure injury.
16. RotoProne specific patient care items:
 - a. Initiate rotation therapy if utilizing the RotoProne bed:
 1. Initiate rotation at 62 degrees once proned (bed default setting).
 2. RN may individualize rotation degree or amount on each side based on patient tolerance. The desired goal is at least 40-degree rotation.
 3. Side to side rotation times recommended settings are 1min-1min-1min or 2min-2min-2min.
 4. Rotation should also occur while patient is in the supine position.
 - b. Perform ROM every two hours by:
 1. Unbuckle arm slings when prone and perform passive ROM.
 2. Open lower hatch to bend patient's knees and change pressure points.
 - c. Prevent shoulder and iliac crest pressure injury during RotoProne bed use:
 1. When prone open all possible back hatches of the RotoProne bed. Hatches can be kept open during continuous rotation up to 62°. Close and lock hatches prior to rotating position.
 2. Adjust support padding as needed
 - d. Clean RotoProne packs and therapy packs daily with saniwipes or soap/water.

D. Discontinuation of proning therapy

1. Discontinuation will be ordered by the physician in CPRS.
2. If RotoProne bed in use:
 - a. Patient will be returned to a regular ICU bed.
 - b. The RotoProne bed may be placed in the outside hallway by RN or Nursing assistant trained in use of RotoProne bed.
 - c. The staff will follow appendix B for initiating the bed return.

Rescission: PSM N-P-5 Pronation Therapy

Recertification: 4/2023

APPROVED BY:

Angelina M. Kinter

Angelina Kinter MSN, RN, CCRN-K
ICU Nurse Manager

4/6/20

Date

Christopher Jahr

Christopher Jahr, MSN, MHA, RN, CNOR
Division Manager, Acute Nursing Division – Inpatient

4-9-2020

Date

Andreea Anton

Andreea Anton MD, FCCP
Division Manager Medical Division

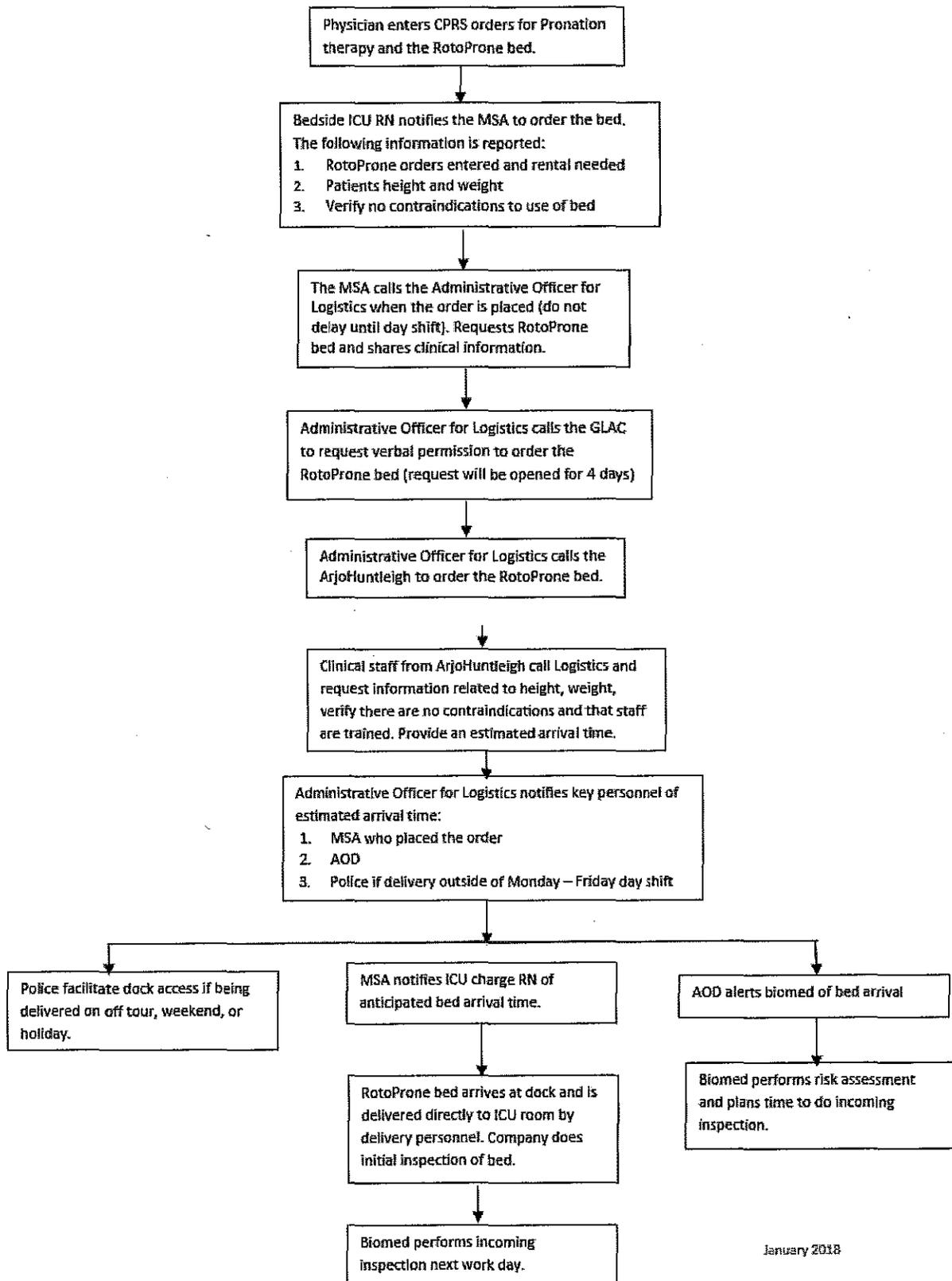
04/10/2020

Date

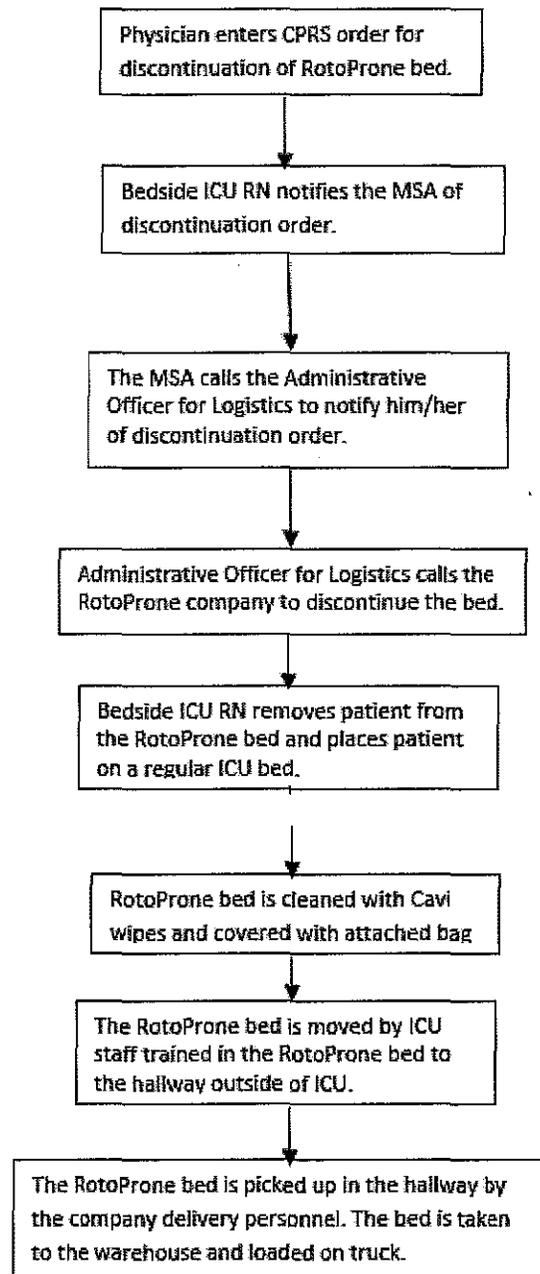
REFERENCES

- Arjohuntleigh Getinge group. (2016). RotoProne Therapy System user manual
Elsevier Clinical Skills. (2020). Pronation Therapy
Drahnak, D. & Custer, N. (2015). Prone Positioning of Patient with Acute Respiratory Distress Syndrome. *Critical Care Nurse*. 35 (6), pages 29-37
Fan, E. et. al (2017). An official American Thoracic Society/European Society of Intensive Care Medicine/Society of Critical Care Medicine Clinical Practice Guideline: Mechanical Ventilation in Adult Patient with Acute Respiratory Distress Syndrome. *American Journal of Respiratory Critical Care Medicine*. 195 (9), pages 1253-1263
Jackson, M. et. al. (2012). Skin Preparation Process for the Prevention of Skin Breakdown in Patients Who are Intubated and Treated with RotoProne. *Respiratory Care*. 57 (2). pages 311-314
Scholten, E. et. al. (2016). Treatment of ARDS with prone positioning. *Chest*. 151(1). pgs. 215-224

Appendix A: RotoProne bed ordering process



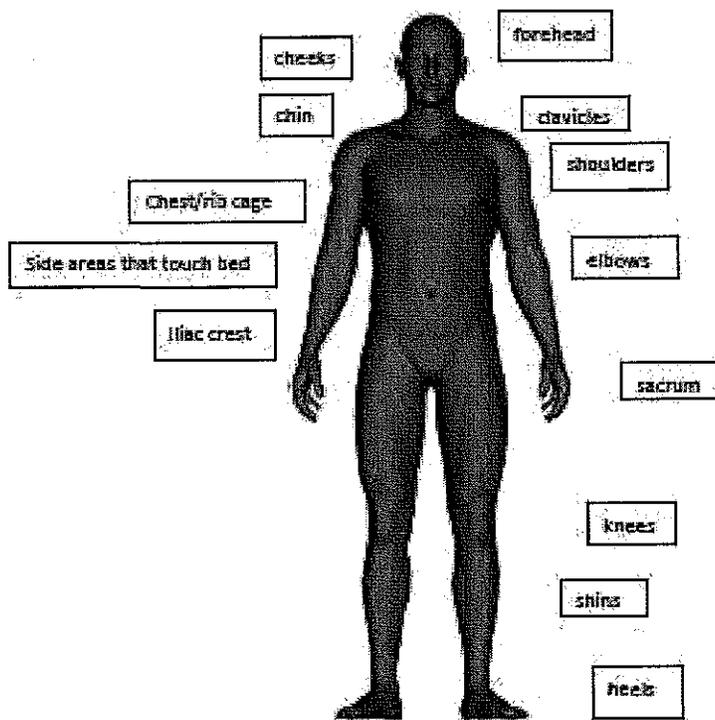
Appendix B: RotoProne bed return process



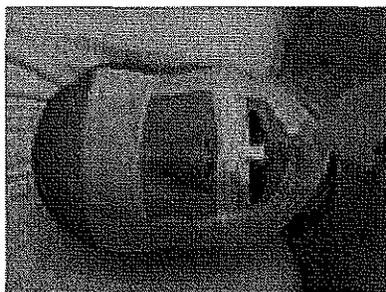
Appendix C: Recommended placement of foam dressing for pronation.

Recommended foam dressing placement for pronation therapy.

(add foam dressing to any additional at risk sites for patient)

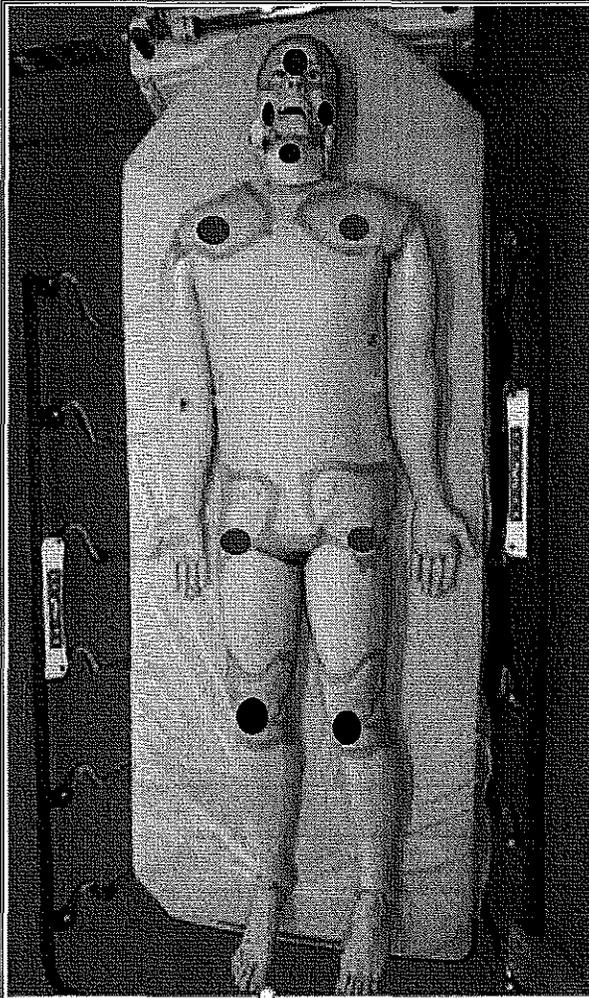


Face example



Appendix D Pressure Injury Prevention for COVID19 Patients

1. Prone Positioning



Protect the SKIN

Apply Mepilex to the following locations:

- Mepilex 4x4 Border
 - On Cheeks
 - ½ to forehead
 - ½ to chin
- Mepilex Sacrum Border
 - Shoulders
 - Anterior Ilium
- Mepilex Heel Border
 - Knees

Other areas to consider if noting breakdown:

- Chest/Ribs
- Top of feet
- Shins
- Other areas erythematous from pressure

DATE & Change dressings weekly if used for Prevention

Assess skin under dressings DAILY (when supine)

Do Not Position on Medical Devices

- Remove EKG pad, Foley securement
- Consider Tubes/Lines

2. Back Lying

- Mepilex Border dressings to Sacrum & Heels
 - Sacral Mepilex may have to be changed 2-3x/week if stool incontinence
- Other areas to consider: Spine & Back of head

3. Repositioning can Help Prevent Skin Breakdown

- Even small turns or Micro-turns can re-perfuse tissues

4. Bariatric bed with foam

- Nursing can order under consult tab
 - New->Inpatient->74 Wound Inpt-> S1 Supply-> Unit nurse/Check/Done-> Accept & Sign
 - WOUND CONSULT ONLY if you need specialty surface/ Low air loss
 - OFF Tours: call nursing supervisor and request Bariatric bet to be ordered